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CONFIDENTIAL*file: Burial Container,
Weapons*

April 5, 1957

*Rec'd 4/15/57
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Dear Sir:

This letter report describes the activity on Task Order No. D during the period from March 1 to April 1, 1957.

During this period, the experimental rectangular-cross-sectioned container was leak tested and shipped to you for examination. Also, fabrication was started on the three prototype containers.

During your visit on March 12, 1957, the three experimental models of closure latch designs were examined, and one of these was selected for use on the rectangular-cross-sectioned containers. This latch design has been incorporated in the experimental container.

Leak testing of the experimental container has been completed. No leaks were found in the container when it was helium tested under the conditions which simulated an external pressure of 6 feet of water. However, when the container was pressurized internally to 1-1/2 psi, a leak developed past the O-ring seal along the 9-inch sides of the closure. It is expected that the basis for this type of leakage will be eliminated in the prototype units by the use of thicker flanges.

After completing the leak testing, we shipped the experimental container to you on March 26, 1957.

Fabrication of the three prototype containers has been started. Three shells for these units have been formed and are being welded. Upon

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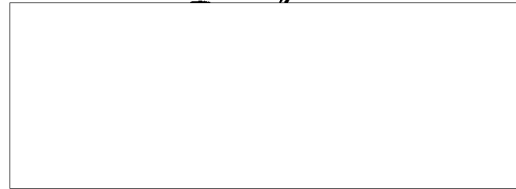
April 5, 1957

receipt of the 16-gage flange parts, we shall fabricate the closures and assemble the containers.

Work for the coming month will consist of completing and leak testing the three prototype containers, and writing the summary report.

The expenditures for the month of March are not available for inclusion in this report.

Sincerely,



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March 15, 1957

Dear Sir:

This letter describes the activity on Task Order No. D during the period from February 1 to March 1, 1957. During this period, one experimental container has been assembled. Flange sections made from 16-gage stainless steel have been ordered for the prototype containers, and three experimental models of closure latch designs have been fabricated.

Fabrication of one experimental rectangular container has been completed and the closure is being leak tested. During welding of the container, a heavy steel insert was used to minimize warping of the flange section. Although the dimensions were not affected by the welding, the weld penetrated the 20-gage flange material and roughened the sealing surface. We repaired the rough areas by filling them with solder and then polishing. To eliminate this problem, we have ordered flanges made from 16-gage material for the prototype containers. These parts are scheduled for delivery by the end of March.

Work on the closure latch has been continued and three experimental designs have been fabricated. Functional operation of these latch designs will be checked on the experimental container.

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March 15, 1957

Work for the coming month will consist of evaluation of the heavier gage flange, and construction and testing of the three prototype containers.

The total appropriation for this Task Order was \$18,540.

As of March 1, 1957, the unexpended balance was approximately \$3,800.)*ns*

Sincerely,



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SECRET*Burial Container, Weapons*

February 19, 1957

Dear Sir:

This letter describes the activity on Task Order No. D during the period from January 1 to February 1, 1957.

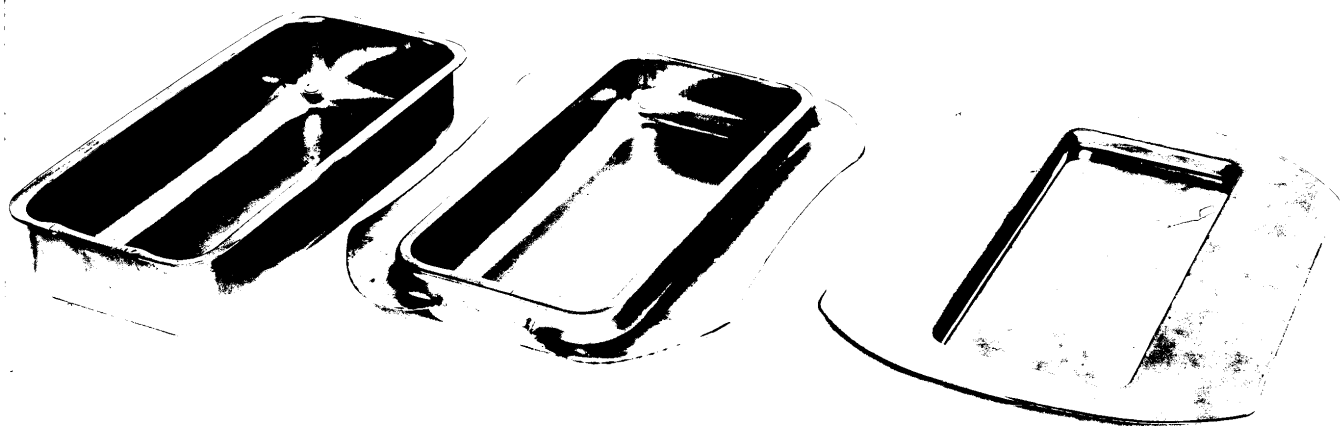
During this period, the closure parts were received and preliminary sealing tests were made. Material for three prototype container shells was purchased and fabrication of two of these units has been started. Four latch designs for the closure appear to be promising and experimental models of these are being prepared.

On January 15, the formed-sheet-metal closure parts were received from the commercial fabricator. Figures 1 and 2 show these parts in the as-formed and trimmed stages. A dimensional check of the parts showed them to be within satisfactory limits considering the complexity of the part configurations.

A preliminary test was made to check the sealing ability of an O-ring when adapted to the formed parts. For this test the unit shown in Figure 3 was constructed. Essentially, this test unit consisted of a lid assembly and a formed box, which was substituted for the proposed flange and container assembly. As shown in Figure 3, the formed-box portion of the test unit did not have a turned-over flange lip. When pressure was applied to the container during testing, the center portions of the long (9 inch) sides bowed and would not seal. Therefore, sealing tests have been discontinued pending the assembly of a full-size container which will incorporate the stronger flange shown in Figure 2.

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Bottom

Flange

Lid

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Figure 1. Closure Parts as Received From Fabricator

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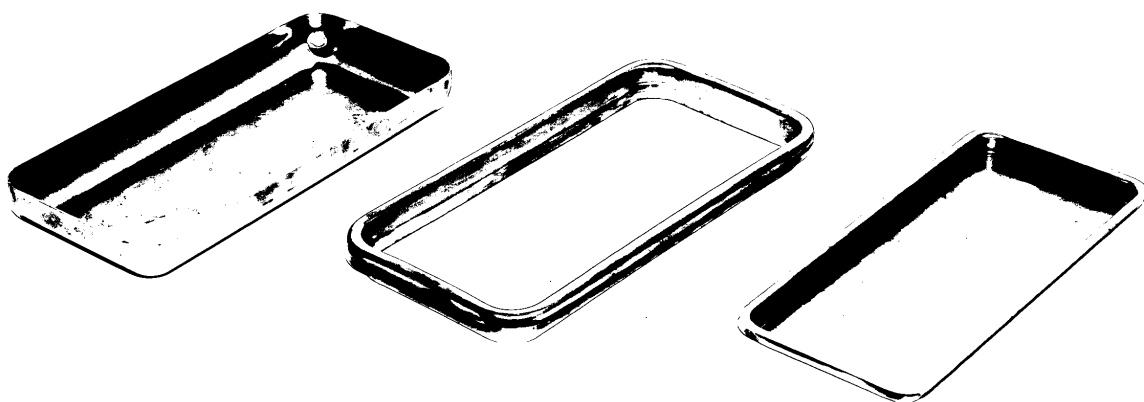
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February 19, 1957

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Bottom

Flange

Lid

Figure 2. Closure Parts After Trimming to Size

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February 19, 1957

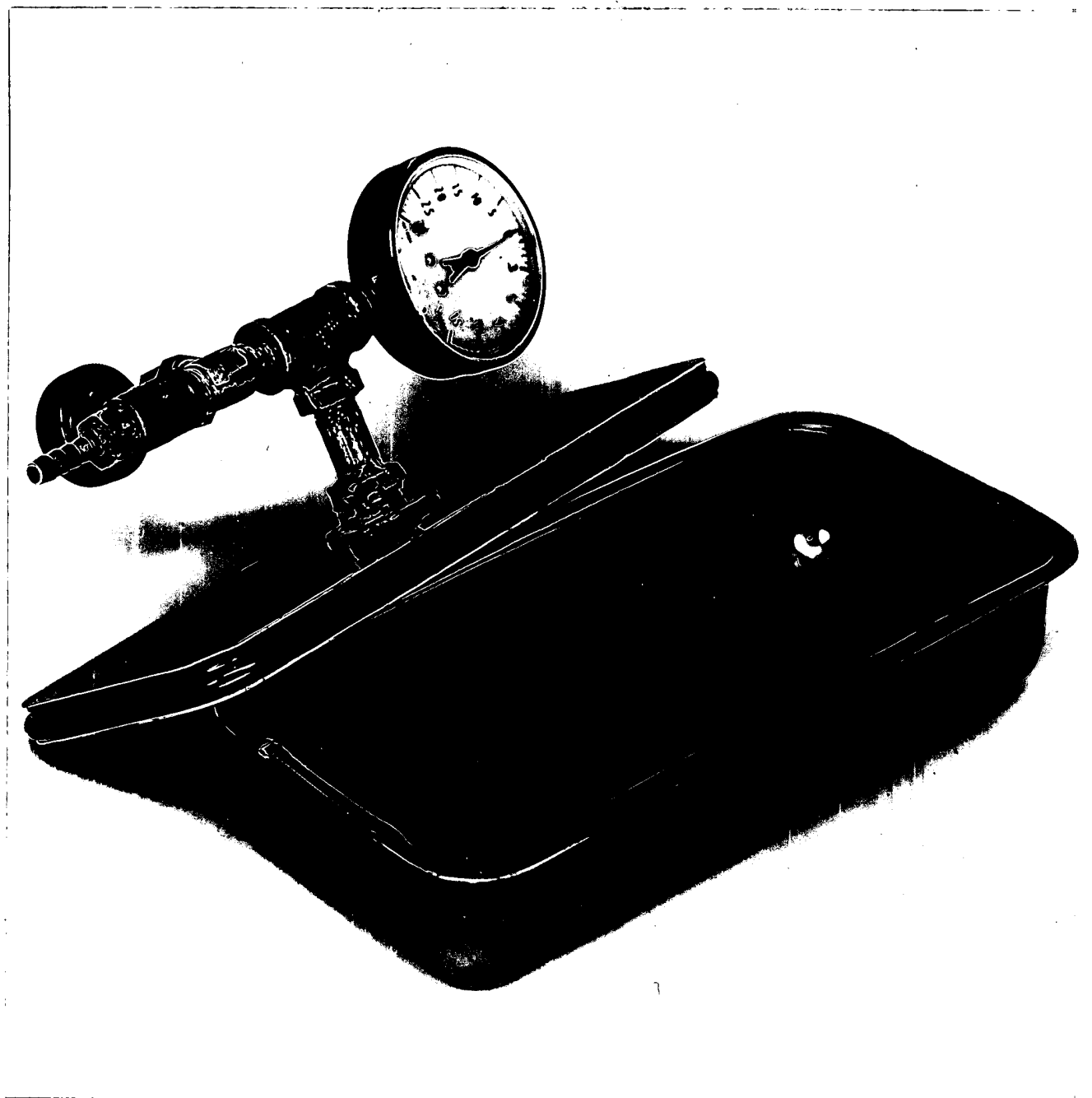


Figure 3. O-Ring-Seal Leak-Test Unit

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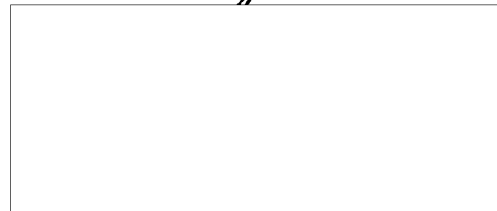
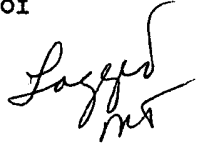
February 19, 1957

As a result of the strength tests on the large-radii experimental rectangular-cross-sectioned container described in the previous monthly report, 22-gage Type 316 stainless steel sheet has been purchased for the three prototype container shells. Fabrication of two of these shells has been started.

After a study of the latching problem for the rectangular-cross-sectioned container, four promising latch designs have been conceived. Experimental models of these designs are now under construction, preparatory to evaluation.

Work during February will consist of completing and leak testing two prototype containers and evaluating the closure latch designs.

The total appropriation for this Task Order was \$18,540. As of February 1, 1957, the unexpended balance was approximately \$5,000.

Sincerely, 

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Burial Containers, Weapons

January 17, 1957

Dear Sir:

This letter describes the activity on Task Order No. D during the period from November 28 through December 31, 1956.

The activity on this project was curtailed during December, pending delivery of the closure parts. However, strength tests were made on an experimental rectangular-cross-sectioned container with 5/8-inch corner radii. Because the dimensions of this test container were identical with those of the proposed container, the satisfactory results obtained from these tests indicate that the proposed container will meet the necessary strength and pressure requirements. The company fabricating the closure parts was contacted, and delivery of these parts is expected during the middle of January.

Two tests were made on the experimental rectangular container with 5/8-inch-radius corners to determine its strength. In the first test, the container was subjected to a pressure equivalent to 10 feet of water for a period of 3 minutes. When the pressure was released, a slight permanent deformation or stretching of the container walls was noted, but this deformation is not considered to be harmful.

In the second test, the container was placed on its 9-inch side and uniformly loaded with 1,350 pounds, in order to simulate the condition of the bottom container of a stack of 12 containers from the standpoint of imposed load; this condition is expected to exist during storage. Examination of the container after loading revealed no adverse deformation of the walls.

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January 17, 1957

The results of these two tests are extremely satisfying because they show that the proposed containers can be fabricated from undimpled 22-gage stainless steel with 5/8-inch corner radii. This means that the containers can be easily manufactured and that each assembled container may weigh as little as 16 pounds.

The company that contracted to fabricate the sheet-metal closure parts was contacted. Due to a delay in receipt of the necessary dies, fabrication of the parts has been retarded. However, delivery of the parts by January 15 has been promised.

Work for the coming month will consist of testing the closure parts for sealing ability, and designing and fabricating a satisfactory latch for the lid. Also, a no-cost time extension of 2 months has been requested, in view of the delay in delivery of the closure parts.

The total appropriation for this Task Order was \$18,540. As of January 1, 1957, the unexpended balance was approximately \$7,200.

Sincerely, /



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file: Burial Containers, weapons

January 10, 1957

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Dear Sir:

This letter describes the activity on Task Order No. D during the period from October 26 to November 28, 1956.

During this period, pressure tests were made on one of the Sponsor's 50-inch-long, 7- x 9-inch stainless steel containers; and an experimental container with 5/8-inch corner radii was fabricated. Also, design work was started on a closure-lid latch, and the rectangular-cross-sectional closure parts were ordered.

As described in the previous report (dated November 5, 1956), pressure and loading tests made on an experimental container with sharp corners indicated that a 22-gage stainless steel shell without dimpling or reinforcing strips would satisfactorily meet the strength requirements for the proposed container. During the current report period, additional pressure tests were made to compare the strength of this type of experimental container (undimpled) with that of one of the Sponsor's 7- x 9- x 50-inch stainless steel containers (dimpled).

For these tests, pressures equivalent to 6 and 10 feet of water were applied to both containers. During the tests made with a pressure equivalent to 6 feet of water, the undimpled container deflected (on the 9-inch side) approximately 1 inch more than did the dimpled container. However, no permanent deformation was noted in either container.

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January 10, 1957

Figure 1 shows the two containers after the tests were made under a pressure equivalent to 10 feet of water. For these tests, the pressure was applied to the containers for a period of 3 minutes and then released. The undimpled container deformed considerably more while the pressure was applied than did the dimpled container. However, when the pressure was released, the experimental (undimpled) container returned to its original dimensions, but the dimpled container was permanently deformed. Obviously, it is desirable for the ultimate version of the container to suffer no permanent deformation under service conditions.

These pressure tests show that dimpling strengthens the shell and minimizes side deflection under equivalent pressures of 6 feet of water or less. However, if pressures of 10 feet of water were to be encountered in service, very little useful additional strength would have been gained by using dimples on the sides of the proposed container.

As pictured in Figure 1, the experimental container was made with relatively sharp corner radii in order to expedite fabrication. There is some doubt, however, that this container would meet the strength requirements if the corner radii were enlarged to $5/8$ inch, as is required by the current design of the closure parts. To permit obtaining pertinent data on this point, an experimental container with $5/8$ -inch radii was fabricated in November, and will be evaluated next month.

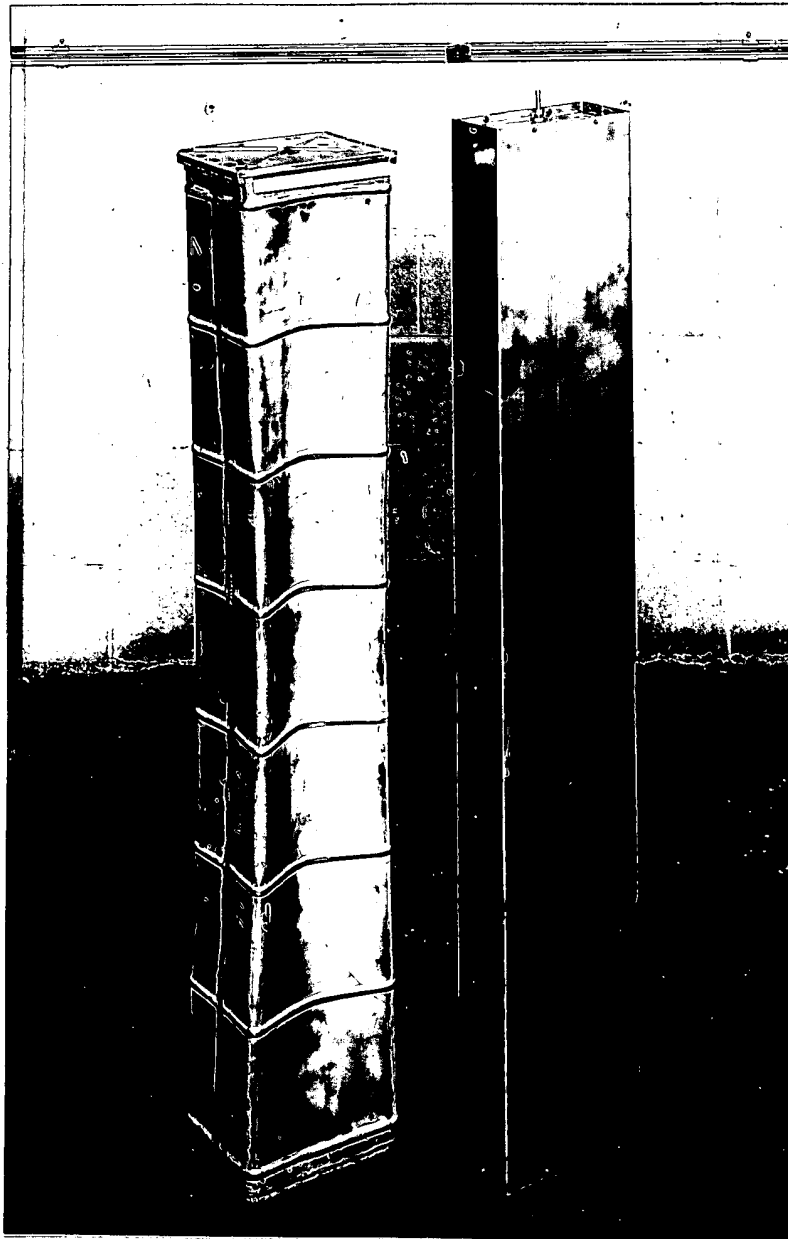
During construction of this experimental container, it was found that a fixture would be useful for holding the shell while the longitudinal seam was being welded. A welding fixture made up for this purpose consisted of a 4-inch I-beam used as the backup strip, 2 clamping bars, a wooden

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January 10, 1957



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Figure 1. Sponsor's 7- x 9- x 50-Inch Stainless Steel Container (left),
and 22-Gage Experimental Stainless Steel Container (right)
After Testing at a Pressure Equivalent to 10 Feet of Water

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January 10, 1957

support beam, and a number of "C" clamps. With the use of this simple welding fixture, a welded seam was produced with very little warpage of the shell.

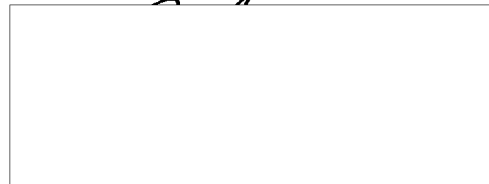
Preliminary design work was started on a latch for the closure lid. A number of spring-clip, detent, and toggle-latch designs are being considered. A model of a detent-type design was made and tested on a simulated closure, but the results were unsatisfactory because of the difficulty involved in simulating the closure. Further work has been suspended on the latch until a prototype closure is available for use in latch testing.

The purchase order for the prototype sheet-metal closure parts was placed on November 6, and delivery is expected within eight weeks.

Work for the coming month will include strength testing the experimental container with 5/8-inch corner radii.

The total appropriation for this Task Order was \$18,540. As of December 1, 1956, the unexpended balance was approximately \$7,500.

Sincerely,



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Expires 3/1/57

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